STUDY of FISH DIVERSITY IN RELATION TO SEASONAL CHANGES OF PARVATI RIVER, BARAN DISTRICT,RAJASTHAN

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Abstract:The River Parvati is main river of Baran district. Fish diversity in the downstream is maximum. .Seasonal changes of environment affects the biodiversity of fishes and can be protected by conservation plans. Environmental stress is faced by fish community and by doing such studies we can overcome the problem of increasing fish species in natural resources of water. Fish diversity of the Parvati River ,Baran district has been studied on monthly basis from September 2017 to May 2018 and different species have been compared at 3 stations, observed that order Cypriniformes>Siluiformes>Osteoglossiformes>Augceiliformes.Different water parameters studied such as temperature, pH, dissolved oxygen, oxygen, alkanity, BOD, Hardness, free CO2 were recorded and were found suitable for fish production accept some seasonal variations and due to temperature increase by organic matter, the water quality was affected.

Index Terms:Ichthyofauns diversity, Parvati River, Physico-Chemical parameters and Species abundance.

I.INTRODUCTION

Biodiversity of Icthyofauna is important for the stabilization of any water body. Rivers have rich strength of fish and this is also affected by the physico-chemical changes of water. River water is used for various purposes viz. drinking, agriculture, anthropogenic activities and fisheries. Diversity of Ichthyofauna is declining day by day due to increased human activities. Extensive survey must be carried out in different seasons because fishes are the main trophic level of food chain in rivers. Biodiversity studies help in collecting data in scientific way and show the latest position of fishes in the river and their abundance .Biodiversity is a tool of fishery survey and by the help of genetic some hidden species can be searched. (Chandashieve et.al; 2007, Kumaran et.al;2010).Since fishes are the main source of food having economic value also are rich in proteins ,vitamins and minerals. Studies of Biodiversity of fish have great importance for fisheries development.

The object of present study is to know the abundance of fish species in the river in different seasons. Fish population is reducing due to increased human activities in rivers. Such studies will help in conservation of fishes by keeping regular watch on them because icthyofauna is essential part of aquatic ecosystem.

Environmental and seasonal changes are bringing drastic changes in the biodiversity of fishes in fresh water bodies now a day (Kannappan et.al;2013). Seasonal changes of the environment affect the biodiversity of fishes. Conservation plans will help us protection of fishes from environmental stress by acknowledging the fish community and thus will increase the fishes in natural resources. Main objective of study is to evaluate the relation of seasonal changes and its effect on water parameters and fishes.

II MATERIAL AND METHOD

Study Area-

Parvati River is situated between Kariyahat Kasba to Chhabra Tehsil and mainly runs in Baran district. It is located between 75º to 79.5º E longitude and 24º to 25.6ºN latitude Three station's samples whose local names are Amalavada, Kishanganj and Digodpur were collected for study from Sept2017 to May 2018 and study was conducted every month so that seasonal changes may be noted.

Collection of Fishes-

Different types of net and boats were used with the help of local fishermen and fish samples were collected during each monthly survey of all the three stations. Collected fishes were preserved in 10% formaldehyde solution and were labelled on the spot giving serial number, location of collection ,date, local name .Photographs were taken before preservation and species were identified on the basis of morphology (Jayram 1981, Day,F;1988, Talwar & Jhingaram1991 and Jayaram1999). Analysis of family, order, genera and species was done.

Collection of Water-

Samples of water from all the three stations were collected every month between 8 AM to 12 Noon in two DO bottles (300ml) and two litre capacity PVR bottle. Water temperatures were recorded by minimum –maximum thermometers, pH by digital pH meter on the spot and remaining tests were conducted in laboratory using method of APHA, 1992.

III. RESULTS AND DISCUSSION-

Fishes of 4 orders, 6 families, 14 genera and 21 species (Table1) were recorded during study period of fish fauna. The order Cypriniformes has highest diversity and dominance by 57.15%followed by Siluiformes 33.33% , Anguilliformes 4.76%, Osteoglossiformes 4.76% (Fig1).

Table 1: Showing Order, Family, Genera & Species of Fishes

S.NO.	Orders Name	Family Name	Scientific Name
1.	Cypriniformes	Cyprinidae	*Cirrhinus reba*
2.	,,	,,	*Cirrhinus mrigala*
3.	,,	,,	*Tor tor*
4.	,,	,,	*Labeo rohita*
5.	,,	,,	*Labeo calbasu*
6.	,,	,,	*Labeo gonius*
7.	,,	,,	*Labeo bata*
8.	,,	,,	*Puntius sophore*
9.	,,	,,	*Puntius sarana*
10.	,,	,,	*Puntius ticto*
11.	,,	,,	*Cyprinus carpio*
12.	,,	,,	*Catla catla*
13.	Siluiformes	Siluidae	*Wallago attu*
14.	,,	,,	*Ompok pabada*
15.	,,	Sisoridae	*Bagarius bagarius*
16.	,,	Bagridae	*Sperata seengala*
17.	,,	,,	*Mystus cavasius*
18.	,,	,,	*Mystus tengara*
19.	,,	,,	*Rita rita*
20.	Osteoglossiformes	Notopteridae	*Notopterus notopterus*
21.	Anguilliformes	Anguillidae	*Anguilla bangalersis*

Biodiversity of fishes in community is compulsory for balancing any ecosystem and is also adversely affected due to release of water in it (Pawara et.al; 2014, Chaudhuri S.K. 2010).

Species richness was studied which indicates well in the month of July followed by highest range in the October (late monsoon), so results show richness and abundance during month of monsoon and post monsoon. Fishes richness was more at station 3.

Seasonal variations in physico-chemical characters affect the fish population's growth and development (Bera et.al; 2014).Climatic changes in freshwater ecosystem effect the nutrients (Bhatt S. D 1992).Water temperature was low in winter but overall temperature was suitable for fish production. pH was desirable .Due to effect on BOD in summer season the effect on fish growth was observed. Alkanity was high from March to May at station 1 which indicates reduction in fish production. Slightly higher hardness in December month effect but still it was not harmful for fishes. Turbidity after rains was high but during rest period it was supporting. Thus balance water parameters show abundance for fish production. Low fish productivity results when industrial and civic waste enters the river and some parameters get effected (Dande S.S et.al; 2018, Keshave et. al; 2013, Sonal D et.al; 2016)

Family wise percentage of Cyprinidae was highest (57.15)>Bagridae(19.04)>Siluidae(9.52)>Sisordae (4.76)>Notopteridae (4.76) > Anguillridae (4.76) {Fig 2}

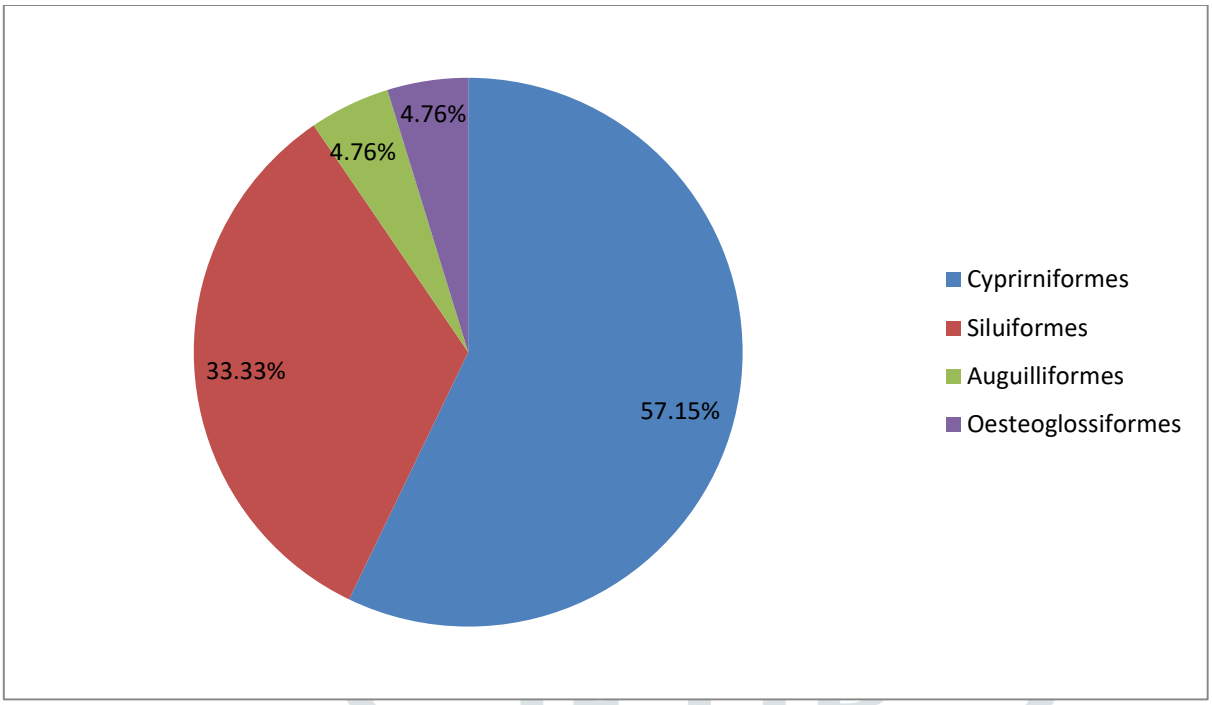

Figure1. Percentage Occurrence of fish orders of Parvati River, Baran

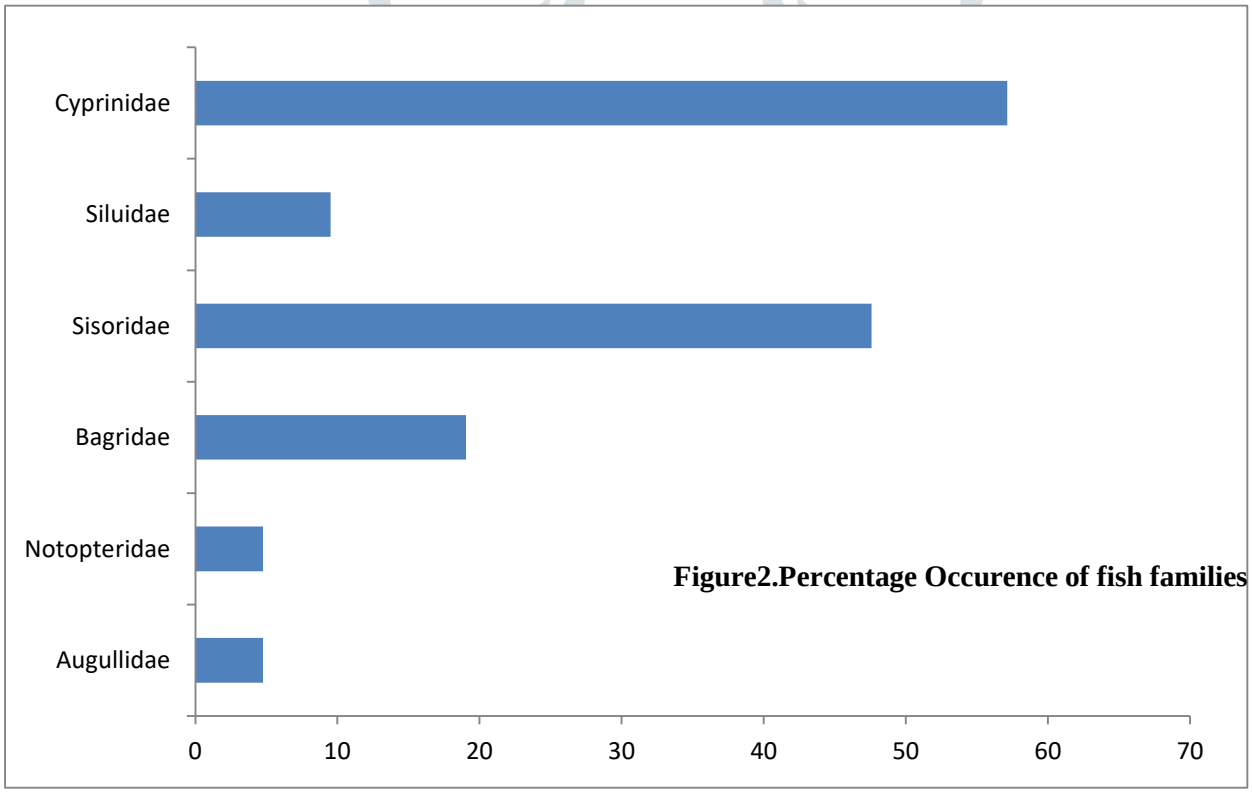

Figure2.Percentage Occurence of fish families

IV. CONCLUSSION:

Survey of fish population is a great challenge .Fish diversity study needs extensive survey by calculating fish abundance, species composition changes due to seasonal changes which have been done in present study. It has been evaluated that the water of Parvati river is good for fish production but during some period, human activities have threatened by sewage and organic matter increase resulting in decrease of fish percentage. Parvati river water is suitable for development of Cyprinidaeformes and Siluiformes orders. Conservation of fish requires impartation of scientific training to fisherman so that small immature fishes are not caught. Available fishes are of good economic importance. Loss of fish species effects fish community structure due to increase in hardness and temperature. Globalization brings great changes in fresh water habitat. Climatic changes and pollution are major threat for fish species.

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